MODEL PROJECT INFORMATION SHEET

SUPPORT FOR RINDERPEST SURVEILLANCE IN WEST ASIA

REGIONAL WEST ASIA - RAW/5/004

SUMMARY

To ensure the eradication of rinderpest in West Asia, it is essential that the current national vaccination programmes achieve high enough levels of immunity in cattle to eliminate the causative virus. This model project will lead to a regional capability through support at the national level, using the FAO/IAEA ELISA-based system for rinderpest sero-monitoring and surveillance. This proven, highly cost-effective and sustainable approach should enable most countries in the region to make international declarations of freedom from this devastating disease within the next four to five years. Vaccination costs (approximately US $1 million per annum) and losses due to animal deaths (costing an estimated $360 million per outbreak) would then be eliminated and livestock movement and trade, both within and outside the region, would increase. This would result in sustainable development of the livestock sector in the region.

Project duration: 4 years. Total budget: US $1,263,800.

INTRODUCTION

In both Africa and Asia, including many countries of the Near East, agriculture is the most important sector in national and regional economies. Up to 40% of total agricultural output is accounted for by livestock farming, 80-90% of which consists of cattle and buffaloes. For maximum productivity and to encourage further investment in their improvement, these animals must remain healthy.

Rinderpest is a highly contagious viral disease of cattle and buffaloes and is acknowledged to be potentially the most damaging virus infection affecting farm livestock in the world. It is present in Africa, Asia and several countries in the Near and Middle East. In the past, rinderpest has destroyed whole populations of cattle, causing widespread economic and political damage. In 1994 outbreaks occurred in Iran, Iraq and Turkey, causing losses

estimated at several million dollars. Fortunately, there is an extremely effective vaccine for the prevention of rinderpest. Its widespread administration, together with adequately applied quarantine restrictions, has led to control and eradication of the disease in many areas. FAO, in association with other international organizations, has initiated the Global Rinderpest Eradication Programme (GREP). This programme assists in co-ordinating a group of regional campaigns - the Pan African Rinderpest Campaign (PARC) for Africa, the West Asia Rinderpest Eradication Campaign (WAREC) for Arabia, and the South Asia Rinderpest Eradication Campaign (SAREC) for Asia. To date, PARC has proved highly successful: rinderpest in Africa has been restricted to only two countries, whereas between 1979 and 1988 it was present in 18 countries.

Since a single inoculation of vaccine protects an animal for life, and the causative virus cannot survive if 85% of cattle are immune, eradication is a realizable goal. To be effective, however, vaccination requires a co-ordinated effort and is unlikely to be successful without verification of the efficacy of vaccination programmes. Therefore, at the outset of PARC, in 1986, it was proposed that in addition to mass annual vaccination campaigns each country should establish a system to determine the effectiveness of its national vaccination programme and, in particular, whether 85% or more of the cattle population was immune. Once at least 85% immunity has been attained, countries could cease vaccination, but they must continue to monitor animals carefully in order to identify any remaining pockets of virus infection. After much discussion, a panel of consultants convened by FAO and IAEA concluded that the immunoassay-based method, ELISA (enzyme linked immuno sorbent assay), offered the ideal solution to the problem of effective determination and subsequent monitoring.

A major factor in eliminating rinderpest from 16 African countries in the past eight years has been the establishment of regional capability to routinely monitor the vaccination programme. In 1994, confidence in the effectiveness of vaccination enabled a number of West African countries to declare a cessation of vaccination, the ELISA technology being used to verify freedom from the disease and its causative virus. This model project aims at the establishment of a similar capability in West Asia, Turkey and Egypt, with a longer term aim of establishing, as part of GREP, a global model project for co-ordinating and supporting the sero-monitoring and surveillance efforts being made within the framework of PARC, SAREC and WAREC.

IAEA TECHNOLOGY

An FAO/IAEA ELISA kit for the detection of antibodies against rinderpest in cattle was developed initially for use in the Agency's programme of support to PARC. This kit has been internationally validated and standardized and is recognized by the Office International des Epizooties (OIE), the veterinary equivalent to the World Health Organization, as the official assay kit for rinderpest sero-monitoring and it will be used in the project. Isotopes are extensively used in the process of developing and purifying reagents for ELISA tests and for validating their specificity and sensitivity. Consequently, although the final test does not involve the use of radioisotopes, without them ELISA tests cannot be developed or the reagents purified. Furthermore, alongside the ELISA technique, radio-labelled DNA probes and similarly labelled reagents in polymerase chain reaction (PCR) will be used for surveillance.

OBJECTIVES

The project aims to establish and regionally co-ordinate the use of the internationally standardized FAO/IAEA ELISA-based system for rinderpest sero-monitoring and surveillance in support of national vaccination programmes to eradicate rinderpest from countries in West Asia, Turkey and Egypt. A regional capability for rinderpest sero-monitoring and surveillance will be established through support to national veterinary laboratories in monitoring rinderpest vaccinations and assisting in identification and elimination of remaining pockets of infection and with the formulation of OIE Provisional Declarations of Freedom from Rinderpest.

PROJECT IMPLEMENTATION AND MONITORING

Regional workshops will be held during each year of the project. The first will establish co-ordination and define the overall programme and will also provide training in the ELISA technique. Training will progress to include ELISA data management, computer skills, rinderpest detection and confirmation in the field, and general epidemiology. Participants will be expected to give an account of the current situation in their own countries in regard to rinderpest sero-monitoring and immunity levels. Their accounts will be collated and published by the Agency as an annual report on immunity levels in all participating countries. To ensure a long term regional capability in rinderpest diagnosis and surveillance, a number of fellows will be identified for advanced training.

In the first year, existing ELISA capabilities will be strengthened in those countries which are already being supported by the Agency (Egypt, Iran, Syria, Turkey, UAE), and the necessary equipment, training and technical backstopping will be provided to the countries requesting support (Iraq, Jordan, Lebanon, Saudi Arabia, Yemen). (The implementation of projects in Iraq will be in accordance with the relevant Security Council resolution and subject to the concurrence of the Sanctions Committee.)

Implementation of the project will be monitored carefully. Three major monitoring "yardsticks" are available. Firstly, each testing laboratory will participate in the FAO/IAEA External Quality Assurance Programme, which independently verifies laboratory results through blind testing of samples. Secondly, annual reports will be issued on sero-monitoring and surveillance activities and results in each participating country. Thirdly, if the project is achieving its primary objectives, individual countries will begin to make OIE Declarations of Freedom from Rinderpest within three to four years. Such declarations will be a major factor in evaluating the impact of this model project. At the conclusion of the project, a seminar will be organized at an appropriate venue for evaluation of project activities, presentation of the main results and qualitative assessment of the impact, with cost-benefit analysis and recommendations for the future.

NATIONAL COMMITMENTS

All participating WAREC countries have clearly indicated their willingness to make the necessary resources available to achieve eradication. At present, each country is committed to an annual national vaccination campaign which involves considerable human

and financial resources. Each participating country will provide sufficient laboratory buildings, staff and infrastructural resources to enable serological testing (including the collection of sera from the field) to be carried out.

INCLUSION OF TURKEY AND EGYPT

Control of livestock movements between Turkey and other countries in the region, particularly Iraq and Iran, is impossible and therefore a co-ordinated vaccination and sero--monitoring effort is required if the disease is to be identified and stamped out. The recent outbreaks in all three countries highlighted the problem and made it clear that success will not be achieved unless Turkey is fully integrated into this regional project. From Egypt, livestock and livestock products are exported to many WAREC countries, but in this case the movement is mainly one-way. However, Egypt possesses considerable human resources (many of the veterinarians in WAREC countries are Egyptian or have been trained in Egypt) in addition to excellent laboratory and vaccine producing facilities, and it is therefore a natural resource base for WAREC. Its inclusion in this regional project would ensure a strong regional technical capability, which is essential if WAREC is to succeed.

THE AGENCY'S INPUT

Annual workshops will be organized for group training. Co-ordination, planning and monitoring activities will also be undertaken.

Many of the countries in the region already have most of the necessary laboratory equipment, including an ELISA reader. The need is therefore primarily for consumables (pipette tips, ELISA plates, cryovials), reagents (ELISA kits) and data management tools (computers and the necessary specialized software). The FAO/IAEA ELISA kits will be provided on an annual basis (US $30,000) along with the necessary consumables (US $24,000).

A full time regional expert will be appointed who would be responsible for the co-ordination of all project activities, liaising with other donors supporting WAREC, technically backstopping the programme, organizing the annual regional workshops and producing the annual report on national rinderpest immunity levels in participating countries. A further two months of expert services will be required. The success of this project will depend on successfully establishing a standardized approach throughout the participating countries and in bringing together the data generated at the national level so as to provide a comprehensive picture.

OTHER DONOR INPUTS

FAO will play a leading role in co-ordinating WAREC activities as part of GREP. It will assist WAREC countries in implementing their national vaccination campaigns and assuring vaccine quality in the region and in the development of regional strategies to ensure timely eradication, in addition to helping WAREC countries to identify possible donors (e.g. the Islamic Bank for Reconstruction, UNDP) of funds for national programmes.

IMPACT

This model project will establish the capability to determine levels of immunity in WAREC countries, to identify areas where revaccination is required and to rapidly create a situation where immunity levels are of a high enough order (over 85%) to ensure control and subsequent eradication of rinderpest The short term effect will be the elimination of the disease and of the losses associated with the death and poor productivity of affected animals, as well as establishment of confidence in the ability of the vaccination programme to eradicate the virus. With a total cattle population of 40 million in Arabia, at an estimated value of US $120 per head, the total cost of a rinderpest pandemic would be US $360 million per annum, assuming 75% mortality rate. The costs of such an outbreak and those associated with vaccination, estimated to be US $40 million per annum, would be saved once the disease is eliminated.

The major impact will be of a longer term nature since the resources established for dealing with rinderpest can be used to encourage the flow of animal disease data from the herd level to veterinary investigation centres, and from there to national authorities. Appropriate policies and cost-effective campaigns can then be developed to control or eradicate other diseases affecting livestock and food security in the region. Although a very large number of people in many WAREC countries are involved in agriculture, the region is a major importer of livestock and livestock products. With the rapid move towards the liberalization of trade and internationally standardized approaches to the establishment of disease status, as agreed under GATT, the proposed assistance will prove crucial in the long term to improving livestock productivity, to reducing the need for costly imports and to giving producers a better chance in the international market place.

SUSTAINABILITY

The Agency's programme of support to PARC has shown that the technologies being transferred are highly suitable for the difficult conditions found in Africa and other regions and are fully sustainable. The ELISA kit is internationally standardized and the cost of the reagents (at present around 25 US cents per test) is a tiny fraction of the overall costs of the programme. Once eradication is achieved, the need for these reagents will be eliminated, and all the other resources established under the project can be utilized to tackle other animal diseases of importance to the region. In the longer term, this will lead to sustainable development of the vital livestock sector in these countries through the control or elimination of the consequences caused by animal diseases, both through direct losses and through the loss of export markets due to the presence of such diseases.

FINANCES

The budget allocation for the project is US $1,263,800, distributed as follows:

Year	Experts		Equipment	Fellowhips		Scientific Visits		Grp Trg	Sub-Contr.	Misc Comp	Total
	M/D	US $	US $	M/D	US $	M/D	US $	US $	US $	US $	US $
1995	14/0	159,600	174,000	12/0	39,600	-	-	40,000	-	-	413,200
1996	14/0	168,000	80,000	12/0	41,400	-	-	40,000	-	-	329,400
1997	14/0	176,400	40,000	-	-	-	-	40,000	-	-	256,400
1998	14/0	184,800	40,000	-	-	-	-	40,000	-		264,800
Total	56/0	688,800	334,000	24/0	81,000	-	-	160,000	-	-	1,263,800

Source of funding: TACF